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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,805	02/20/2004	Rajesh Venkat Subbu	52493.000361	5189
21967 7590 10/29/2008 HUNTON & WILLIAMS LLP INTELLECTUAL PROPERTY DEPARTMENT 1900 K STREET, N.W. SUITE 1200 WASHINGTON, DC 20006-1109				
EXAMINER				
NEWTON, JARED W				
ART UNIT		PAPER NUMBER		
3693				
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10/29/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/781,805

**Applicant(s)**

SUBBU ET AL.

**Examiner**

JARED W. NEWTON

**Art Unit**

3693

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This final rejection is in reply to the remarks filed July 22, 2008, by which claims 1-26 were canceled, and claims 27-54 were added.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 47-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, claims 47-54 each disclose a "system," but they depend from claim 46, which sets forth a "computer readable medium."

#### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 27-36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are drawn to a process. For a process to amount to patent eligible subject matter, it must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. The process of claims 27-36 does not meet either of these requirements.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over WIPO Publication Number WO 02/075650, inventor Yao (hereafter "Yao"), in view of US Patent No. 7,155,423 to Josephson et al. (hereafter "Josephson").

In regard to claim 27, Yao discloses a method for multi-objective problem solving using evolutionary algorithms, said method comprising:

randomly drawing an initial population of individual solutions that are generated from an archive by using a combination of linear programming and sequential linear programming algorithms using a computing device (see claim 1);

passing the initial population of solutions through a dominance filter to identify a non-dominated subset of parent solutions (see claim 1; pages 16-22);

committing the non-dominated subset of parent solutions to a non-dominated solutions archive;

randomly combining matched pairs of parent solutions to create offspring solutions (see pages 16-22);

passing the offspring solutions through the dominance filter to identify a non-dominated subset of offspring solutions (see pages 16-22);

combining the non-dominated subset of parent solutions with the non-dominated subset of offspring solutions into a larger set of solutions (see pages 16-22);

passing the larger set of solutions through a non-crowding filter to identify a reduced subset of solutions in order to create a new population of individual solutions from the reduced subset of solutions, and updating the solution archive with the new population (see pages 32-36);

repeating the above steps for a plurality of generations (see claim 1); and

passing the updated non-dominated solutions archive through a dominance filter to generate an interim efficient frontier having at least three dimensions, the frontier being used to make problem solution decisions (see claim 1).

Yao does not explicitly disclose the problem sought to be solved as the optimization of a portfolio, wherein the solutions in the population are potential asset allocations.

Josephson discloses a system and method for multi-criteria decision making, wherein said system and method are used for portfolio optimization in investment decisions based on competing objectives and a plurality of constraints (see e.g. col. 4, lines 15-19), wherein said method analyzes an initial population of solutions for potential portfolio allocations (see col. 4, lines 8-19). It would have been obvious to one of ordinary skill in the art of multi-objective problem solving to use the method disclosed by Yao to solve the portfolio optimization problem disclosed by Josephson. It was well known in the art at the time of the invention to use evolutionary algorithms and dominance filters as disclosed by Yao to solve many problems having multiple objectives, including portfolio

optimization problems. The motivation for using the method of Yao to solve a portfolio optimization problem would be the same as when the method is used to solve any multi-objective solution: to find pareto-optimal solutions from among an initial population of potential solutions.

In regard to claims 28-31, Yao further discloses the subset of parent solutions having a first cardinality, the offspring having a second cardinality that is different than the first cardinality (via mutation), the larger solution set having a third cardinality that is equal to the first cardinality plus the second cardinality, and the subset having a fourth cardinality that is less than the third cardinality (see pages 16-22).

In regard to claim 32, Yao discloses repeating the disclosed steps until convergence is achieved (see claim 1).

In regard to claim 33, it is inherent within the teaching of Yao that when the reduced solution subset has a fourth cardinality, the new population of solutions will be exactly equal to the reduced set of solutions if the fourth cardinality is equal to the initial population.

In regard to claim 34, Yao further discloses the reduced subset of solutions having a fourth cardinality, wherein the new population of solutions is created by randomly drawing additional solutions from the archive if the fourth cardinality is less than the initial population of solutions (see pages 16-22).

In regard to claim 35, Yao further discloses the reduced set of solutions having a fourth cardinality, wherein the new population of individual solutions is created by

randomly discarding individual solutions from the reduced subset of solutions is the fourth cardinality is greater than the initial population of solutions (see pages 16-22).

In regard to claim 36, Yao further discloses the new population of individual solutions as created by randomly injecting individual solutions from the archive until the fourth cardinality is equal to a desired number of solutions (see pages 16-22).

In regard to claims 37-54, the claims are deemed unpatentable in view of the combination of Yao and Josephson as applied to claims 27-36 above. It would have been obvious to one of ordinary skill in the art at the time of the invention to embody the method disclosed by Yao in a system or on a computer readable medium.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JARED W. NEWTON whose telephone number is (571)272-2952. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Kramer can be reached on (571) 272-6783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James A. Kramer/  
Supervisory Patent Examiner, Art Unit 3693

JWN  
October 26, 2008